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None

(58) Field of Search

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INT CL⁷ E05C 17/12 17/16 17/20 17/22 17/24
ONLINE DATABASES: WPI, EPODOC, JAPIO

(54) Abstract Title
Security device

(57) A security device for securing an opening member, for example a door, in relation to a fixed member. The device has a bolt 1 which is pivotally and slideably connected to an opening member via an attachment means 3. A keeper 11 is provided on the fixed member and has an engagement opening for receiving the bolt 1. Latch 7, is provided for securing the bolt 1 in relation to the opening means. The security device has three positions a locked position in which the device locks the opening member closed in relation to the fixed member by the bolt engaging both the latch and the keeper (Fig 2); a restricted position in which the device allows the opening member to open a limited distance from the fixed member by the bolt engaging the keeper but not the latch and the bolt is rotated until it is approximately perpendicular to the opening member (Fig 3) thereby allowing the bolt to slide in relation to the opening member (Fig 4); and an open position in which the bolt disengages the keeper and engages the latch (Fig 1) thereby allowing the opening member to open fully away from the fixed member.

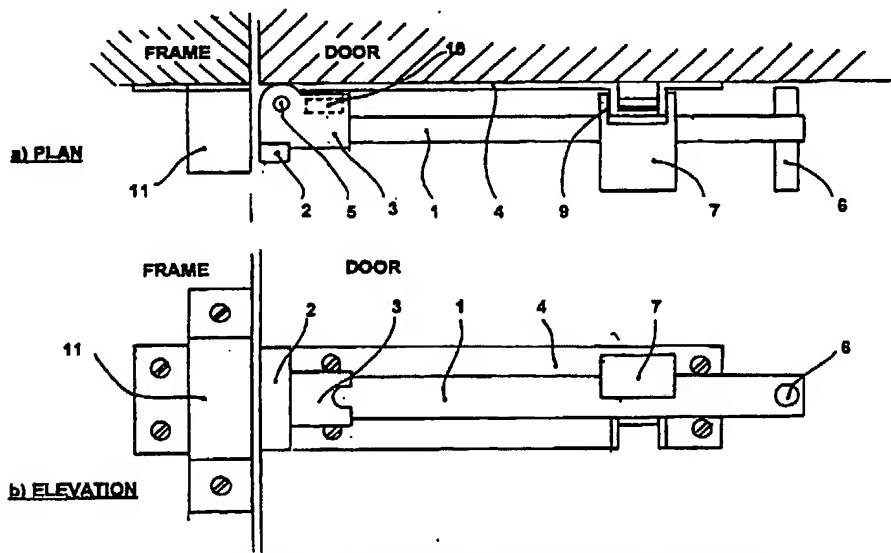
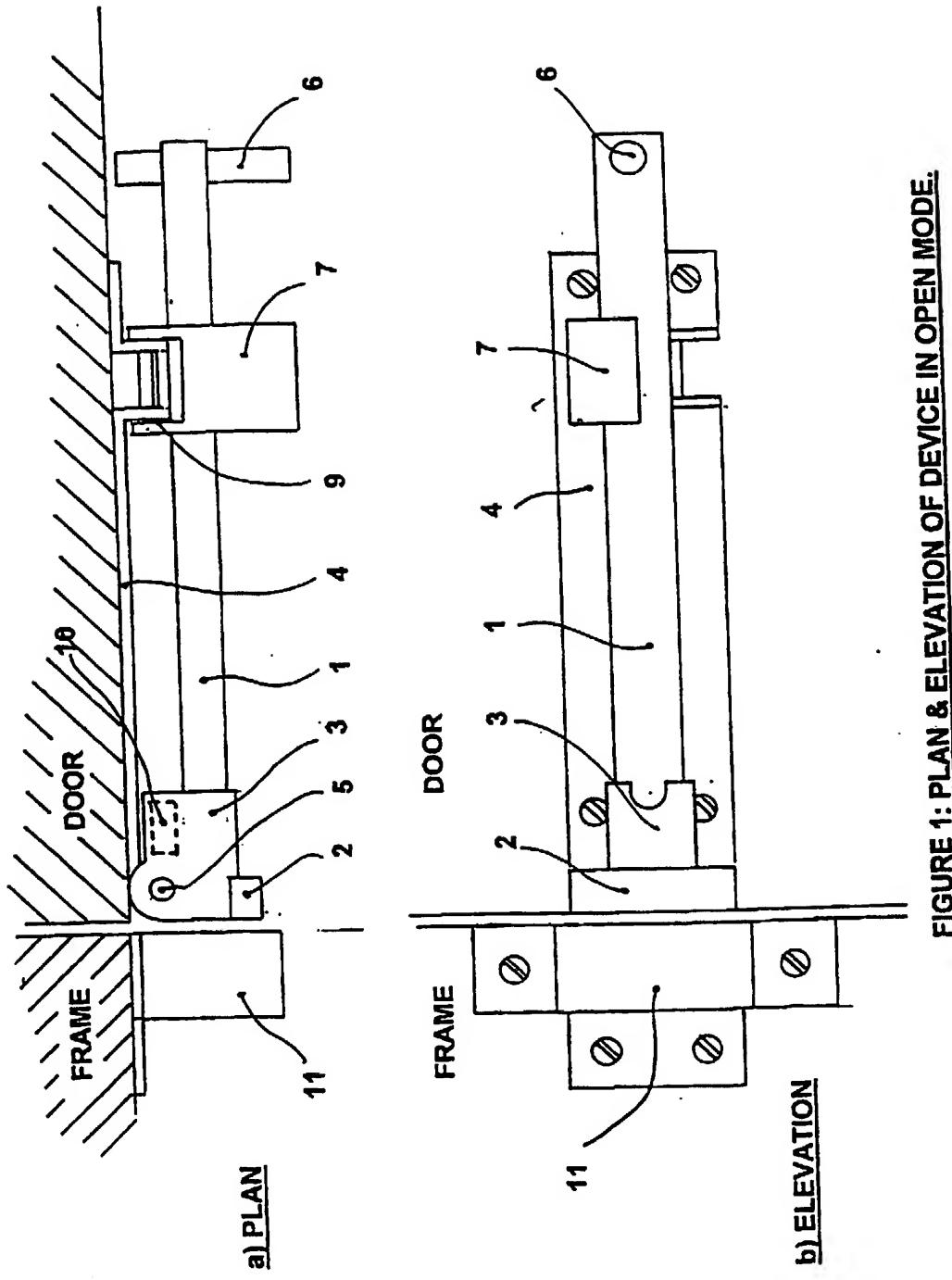


FIGURE 1: PLAN & ELEVATION OF DEVICE IN OPEN MODE.

The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

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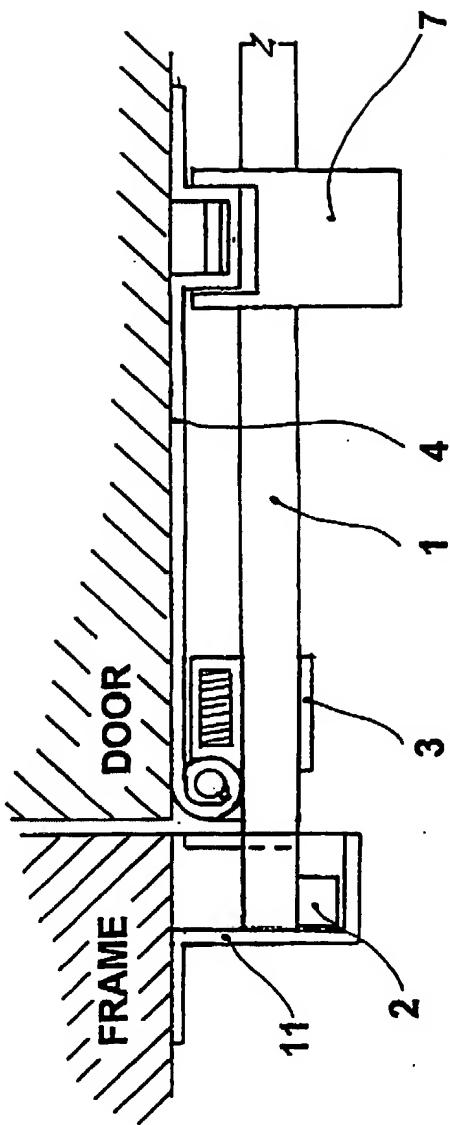


FIGURE 2: SECTIONAL PLAN OF DEVICE IN LOCKED MODE

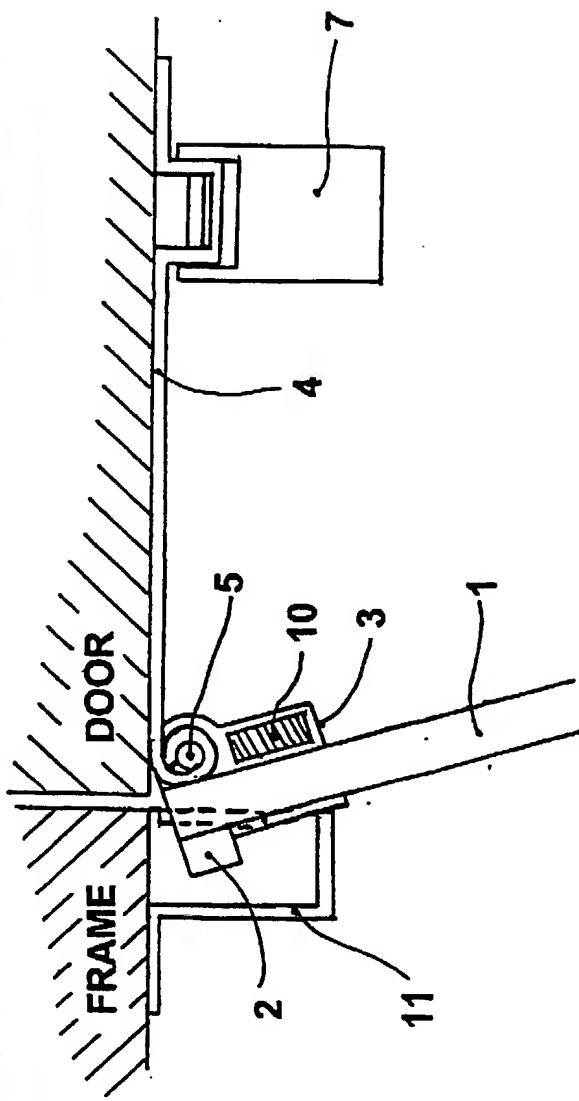


FIGURE 3: SECTIONAL PLAN OF DEVICE IN RESTRICTED MODE

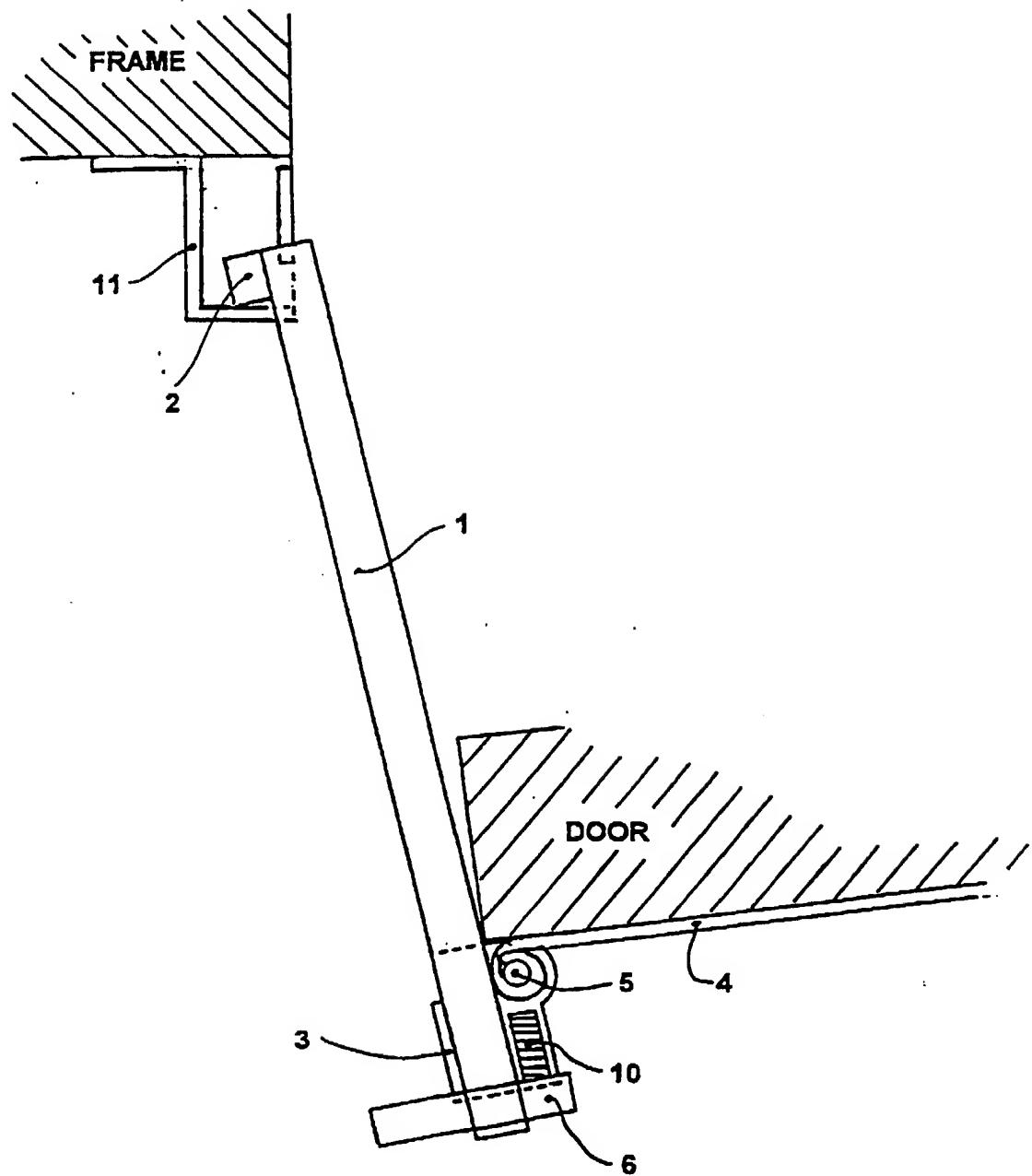


FIGURE 4: SECTIONAL PLAN OF THE DEVICE IN RESTRICTED MODE
DOOR OPENED FULLEST EXTENT.

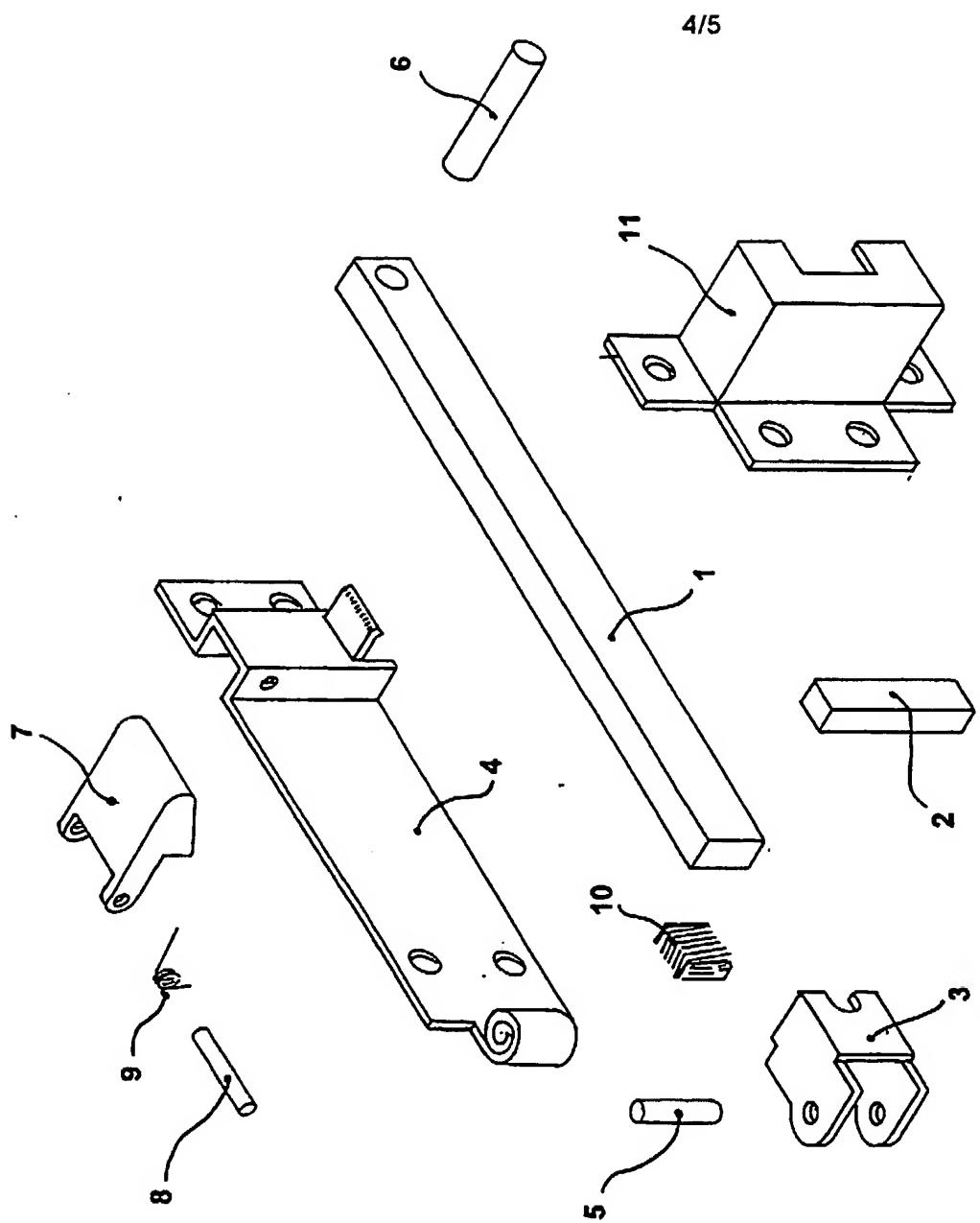


FIGURE 6: ISOMETRIC OF THE COMPONENT PARTS OF THE DEVICE.

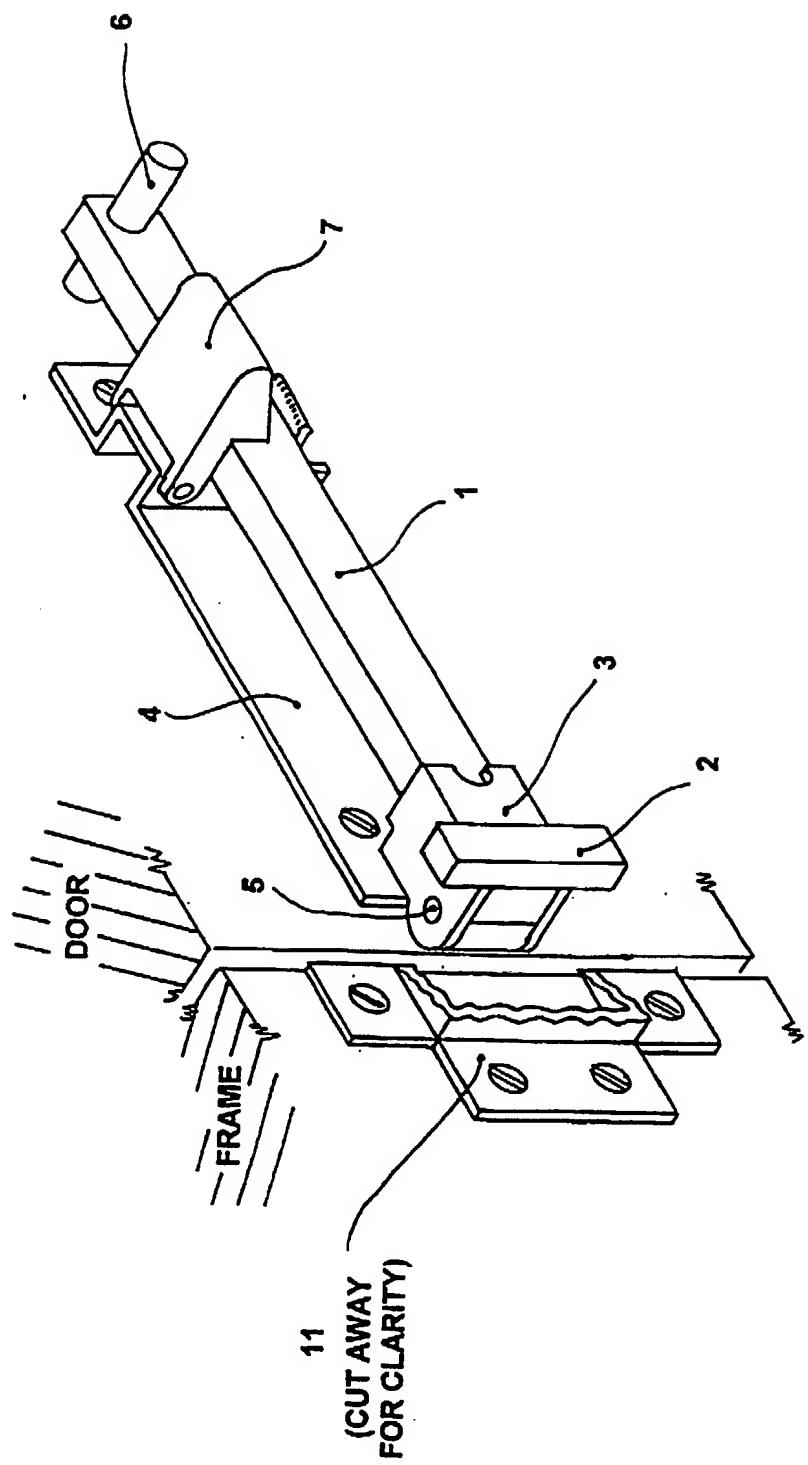


FIGURE 6: ISOMETRIC OF COMPLETE DEVICE

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SECURITY DEVICE

This invention relates to a mechanical device attached to the inside of a door or any other opening panel to form a means of securing the door in its closed position and preventing it being opened. It may also allow the said door to be opened by an amount restricted by the device and then being secure against further opening movement. With the door in its closed position the device may also be unlocked, i.e. arranged in such a way as to allow the door to be opened fully.

A typical application for such a device is to allow the door to be partially opened for security reasons e.g. to check on a caller, whilst preventing the door from opening sufficiently to allow access. It could also be used on opening windows to allow them to be opened sufficiently for ventilation purposes, but not sufficient to allow an intruder access.

The following definitions shall hereinafter be referred to for convenience:

With the device arranged to prevent the door from being opened, referred to as locked position

With the device arranged to restrict the extent of opening of the door, referred to as restricted position

When the door is free to open, i.e. not restrained in any way by the device, referred to as open position

Previous U.K. Patent 1 435 698 is an example of such a device, however, this had the following disadvantages:

(a) The "flat bolt" (shown as part 23) has no positive means of distinguishing between the three positions of operation, i.e. open, restricted or closed. If such a modification is made to the "flat bolt" (i.e. by providing positive engagement at each position) the three positions may be confusing to the user.

(b) When the door is opened with the device in the restricted position the "flat bolt" (23) will rotate away from the door about "pivot pin" (21), this could be hazardous to the user.

Previous U.K. Patent GB 2 292 970 is another example of such a device, but this again does not address all these problems.

It is an aim of this invention to utilise a mechanical device that will provide a means of securing a door in a closed position or limiting the extent to which a door can be opened or allowing it to fully open.

According to this invention the device comprises an elongate rod of square, rectangular, circular or other substantially prismatic form, hereinafter referred to as the bolt, slideably connected to a retainer which is attached in proximity to an opening edge of the door in such a way that it allows rotation of this combined bolt/retainer assembly about an axis substantially parallel and in close proximity to this opening edge of the door, brackets into which the bolt may engage are provided, one attached to the door in proximity to the end of the bolt furthest from the said door opening edge, hereinafter known as the latch, which may be adjusted in or out of engagement with the bolt, and another on the frame (or any other fixed door surround), hereinafter known as the keeper, the bolt/retainer assembly and brackets are arranged in such a way that when the longitudinal axis of the bolt is substantially parallel to the plane of the door and the door is closed the bolt may co-operatively engage with the latch only or both latch and keeper, the assembly is arranged in such a way that when the bolt is engaged in the latch only and not engaged in the keeper the door may be fully opened, when the bolt is engaged co-incidentally in both keeper and latch the door may not be opened as it is held shut by the device, and when the bolt is located in the keeper and the latch is released from engagement with the bolt, the bolt may be rotated away from the door until it is approximately perpendicular to the door, the bolt remains in secure engagement with the keeper in this position and the door may be opened and the retainer moves axially along the bolt as the door is opened until further relative bolt/retainer movement is prevented by a stop means on the bolt making contact with the baseplate, the retainer or the hinge i.e. the door may be opened no further and with the bolt in this position it cannot be disengaged from the keeper, such disengagement only being possible when the door has been closed and the bolt rotated to its original position, i.e. parallel to the door.

According to another aspect of this invention, the bolt element has provided at the end nearest the keeper a lug, or similar means, for the purpose of secure engagement in the keeper.

The bolt/lugs cannot be disengaged from the keeper whilst the door is being opened in restricted position as the lugs that are attached to the bolt, once rotated by the action of rotating the bolt away from the door, cannot pass through the opening in the keeper.

According to yet another aspect of this invention, the latch may be spring assisted in order to maintain it in engagement with the bolt. The Latch may also incorporate a sloping surface which causes it to be displaced when returning the bolt to it's position parallel to the door, i.e. it does not prevent the bolt from returning to this position. If the latch is spring assisted as described above, it will engage with the bolt once it has been returned to it's rotated position parallel to the door thereby returning the device to the locked position.

According to yet another aspect of this invention a shock absorbing means may be incorporated into the device. This may be the form of a spring, rubber bush, rubber block, etc., mounted on the retainer or on the bolt/stop means. The purpose is to prevent shock loading to the device or the door/frame when the retainer or baseplate or hinge strikes the stop means on the bolt at the end of restricted door opening, e.g. if an attempt is made to force the door open whilst restricted. The spring is located between the stop means and the object of contact, i.e. baseplate, hinge or retainer.

A security device constructed in accordance with the invention will now be described by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a plan and elevation of the device in open mode.

Figure 2 is a sectional plan of the device in locked mode.

Figure 3 is a sectional plan of the device in restricted mode.

Figure 4 is a sectional plan of the device in restricted mode with the door opened to its fullest extent.

Figure 5 is an isometric of the component parts of the device.

Figure 6 is an isometric of the complete device.

Referring to the drawings, bolt 1 is formed from square or rectangular bar with a lug 2 attached to one end. Retainer 3 is attached to baseplate 4 with a hinge i.e. hinge pin 5, the bolt 1 is housed within retainer 3 and is free to slide axially within it. A hinged latch 7 is located on the baseplate 4, this latch may be engaged with bolt 1 when the bolt is parallel to the baseplate 4. An optional spring 9 maintains engagement of the latch 7 on bolt 1. A handle 6 is also located on the bolt 1 and a spring element 10 is housed within the retainer 3. This assembly is attached to the inside face of the door using baseplate 4.

Keeper 11 is attached to the door frame, this is aligned with bolt 1 so that bolt 1 and lug 2 may be engaged with it when the door is closed (Figure 2). This engagement is achieved by sliding the bolt 1 axially through the retainer 3, handle 6 facilitates this action. In this engaged position with latch 7 engaged with the bolt the door is locked by the device.

To engage restricted position (Figure 3), latch 7 is disengaged from bolt 1 and the bolt is rotated away from the door about the retainer/baseplate hinge axis i.e. hinge pin 5 until it is very approximately perpendicular to the door. Lug 2 remains in engagement with keeper 11, in fact, in a preferred arrangement the lug cannot be disengaged from the keeper whilst in this restricted mode position.

When the door is opened in restricted position (Figure 4) the retainer 3 slides axially along the bolt 1 until it is stopped by action of the handle pin 6 upon spring 10 which is restrained by the retainer/backplate hinge. In this position the door cannot be opened further. The device will operate if the bolt is not rotated until it is approximately perpendicular to the door, however, under such circumstances the bolt will swing away from the door as the door is opened, this may be hazardous to the user.

To release or relock the device, the door has to be shut whereupon the bolt is rotated back to its original position parallel to the baseplate and into engagement with latch 7, the door is now locked. Opening the door is now a matter of sliding bolt 1 axially through the retainer 3 and out of engagement with keeper 11.

CLAIMS:

1. A security device for securing an opening member in relation to a fixed member, comprising:
 - a bolt;
 - an attachment means for attaching the bolt in pivotable and slidable attachment to the opening member, the bolt cannot be detached from the attachment means;
 - a bracket attached, in use, to the fixed member which is adapted to pivotally receive a first end of the bolt; and
 - a securing means for selectively securing the bolt to prevent the bolt from pivoting in relation to the opening member;

wherein the security device has: a locked position in which the device locks the opening member closed in relation to the fixed member by the bolt engaging both the securing means and the bracket; a limiting position in which the device allows the opening member to open a limited distance from the fixed member by the bolt engaging the bracket but not the securing means and the bolt being rotated about the attachment means until it is approximately perpendicular to the opening member; and an open position in which the bolt is disengaged from the bracket thereby allowing the opening member to open fully away from the fixed member.

2. A security device as claimed in claim 1, wherein once the bolt had been rotated to the limiting position it cannot be disconnected from the bracket.
3. A security device as claimed in claim 1 or 2, wherein a shock absorbing means is incorporated within the device to protect against damage caused by sudden or forced opening when in limited opening position.
4. A security device as claimed in any one of the preceding claims, wherein the bolt has a projection which projects from the bolt perpendicular to the axis of the bolt, this projection limits the extent of opening of the opening member when in limiting position.
5. A security device as claimed in any one of the preceding claims, wherein the bracket has an engaging opening and a reduced size opening extending from the engaging opening.
6. A security device as claimed in claim 5, wherein the bolt has a portion of increased thickness which fits within the engaging opening of the bracket.
7. A security device as claimed in any one of the preceding claims, wherein the securing means is fixedly attached, in use, to the opening member and forms a means in which the bolt can be received wherein the securing means is displaced by the bolt when the bolt is rotated from the limited position to the locked position and thereby retaining the bolt in the locked position.
8. A security device as claimed in any one of the preceding claims, wherein the attachment means is pivotally attached to the opening member by a hinged plate, the axis of the pivotal attachment being parallel and in close proximity to the edge of the opening member adjacent the fixed member.
9. A security device as claimed in any one of the preceding claims, wherein the bolt is parallel to the plane of the opening member when the security device is in the locked position.
10. A security device as claimed in any one of the claims 4 to 9, wherein an alarm activator is provided on the attachment means which is activated by the pressure of the projection from the bolt if the opening member is forced when the security device is in its limiting position.
11. A security device substantially as hereinbefore described with reference to the accompanying drawings.

Amendments to the claims have been filed as follows

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CLAIMS:

1. A security device for securing an opening member in relation to a fixed member, comprising:

a bolt;

an attachment means for attaching the bolt in pivotable and slidably attachment to the opening member, the bolt cannot be detached from the attachment means;

a bracket attached, in use, to the fixed member which is adapted to pivotally receive a first end of the bolt; and

a securing means for selectively securing the bolt to prevent the bolt from pivoting in relation to the opening member,

wherein the security device has: a locked position in which the device locks the opening member closed in relation to the fixed member by the bolt engaging both the securing means and the bracket; a limiting position in which the device allows the opening member to open a limited distance from the fixed member by the bolt engaging the bracket but not the securing means and the bolt being rotated about the attachment means until it is approximately perpendicular to the opening member; and an open position in which the bolt is disengaged from the bracket thereby allowing the opening member to open fully away from the fixed member.

2. A security device as claimed in claim 1, wherein once the bolt had been rotated to the limiting position it cannot be disconnected from the bracket.
3. A security device as claimed in claim 1 or 2, wherein a shock absorbing means is incorporated within the device to protect against damage caused by sudden or forced opening when in limited opening position.
4. A security device as claimed in any one of the preceding claims, wherein the bolt has a projection which projects from the bolt perpendicular to the axis of the bolt, this projection limits the extent of opening of the opening member when in limiting position.

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5. A security device as claimed in any one of the preceding claims, wherein the bracket has an engaging opening and a reduced size opening extending from the engaging opening.
6. A security device as claimed in claim 5, wherein the bolt has a portion of increased thickness which fits within the engaging opening of the bracket.
7. A security device as claimed in any one of the preceding claims, wherein the securing means is fixedly attached, in use, to the opening member and forms a means in which the bolt can be received wherein the securing means is displaced by the bolt when the bolt is rotated from the limited position to the locked position and thereby retaining the bolt in the locked position
8. A security device as claimed in any one of the preceding claims, wherein the attachment means is pivotally attached to the opening member by a hinged plate, the axis of the pivotal attachment being parallel and in close proximity to the edge of the opening member adjacent the fixed member.
9. A security device as claimed in any one of the preceding claims, wherein the bolt is parallel to the plane of the opening member when the security device is in the locked position.
10. A security device as claimed in any one of the claims 4 to 9, wherein an alarm activator is provided on the attachment means which is activated by the pressure of the projection from the bolt if the opening member is forced when the security device is in its limiting position.
11. A security device substantially as hereinbefore described with reference to the accompanying drawings.



INVESTOR IN PEOPLE

Application No: GB 9823516.1
Claims searched: 1-11

Examiner: A J Rudge
Date of search: 14 June 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): E2A(ACMA, ACME)

Int Cl (Ed.7): E05C-17/00;17/02;17/04;17/12;17/16;17/20;17/22;17/36

Other: Online databases: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2292970 A (Hamer) - mentioned in application - see whole document	1 at least
X	GB 1435698 (Kenrick) - mentioned in application - see whole document	.

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.